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ABSTRACT

Questionnaires were sent to 382 public and non-public New Jersey secondary schools to determine the status of science teaching during 1981-1982. Survey results (with 55% response) are reported for general information (staffing, certification, teaching duties, and others), supervisory personnel, subject matter organization, textbooks used, second year courses, and science electives. Highlights focus on percentage of students taking science (increase from 61.9% in 1978 to 67.0% in 1982), field trips, reimbursement for conferences/conventions, teaching load and non-teaching duties, paid laboratory assistants, staff decreases (due to teachers accepting positions in business/industry and declining enrollments), supervisor experiences, supervising teaching load, supervisor certification, supervisors and evaluation of personnel, advanced placement programs, second year courses, instructional time, double lab periods (decreasing in biology, chemistry, and physics), program and program use (decrease in use of science course improvement project materials- BSCS, Chem Study, Project Physics, PSSC Physics, and ESCP Earth Science, and increase in IPS, Modern Physics, and Modern Chemistry), and earth science, physical science, biology, chemistry, and physics textbooks used in 1969, 1974, 1978, and 1982. (JN)

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NEW JERSEY
SCIENCE TEACHERS ASSOCIATION

A SURVEY OF SCIENCE TEACHING
IN THE
SECONDARY SCHOOLS OF NEW JERSEY
1981-82

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SCIENCE TEACHERS ASSOCIATION

A SURVEY OF SCIENCE TEACHING IN THE SECONDARY SCHOOLS OF NEW JERSEY 1981-82 .

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INTRODUCTION

This is the fourth in a series of surveys conducted over the past fourteen years to examine the status of science education in New Jersey. The first three reports were done in 1968-69, 1973-74, and in 1977-78, and included information only from public schools. In this survey, information was also obtained from non-public schools to determine if there were significant differences in trends between the two types of schools. It was interesting to note that the data received from non-public schools are much more similar to the public school data than they are different.

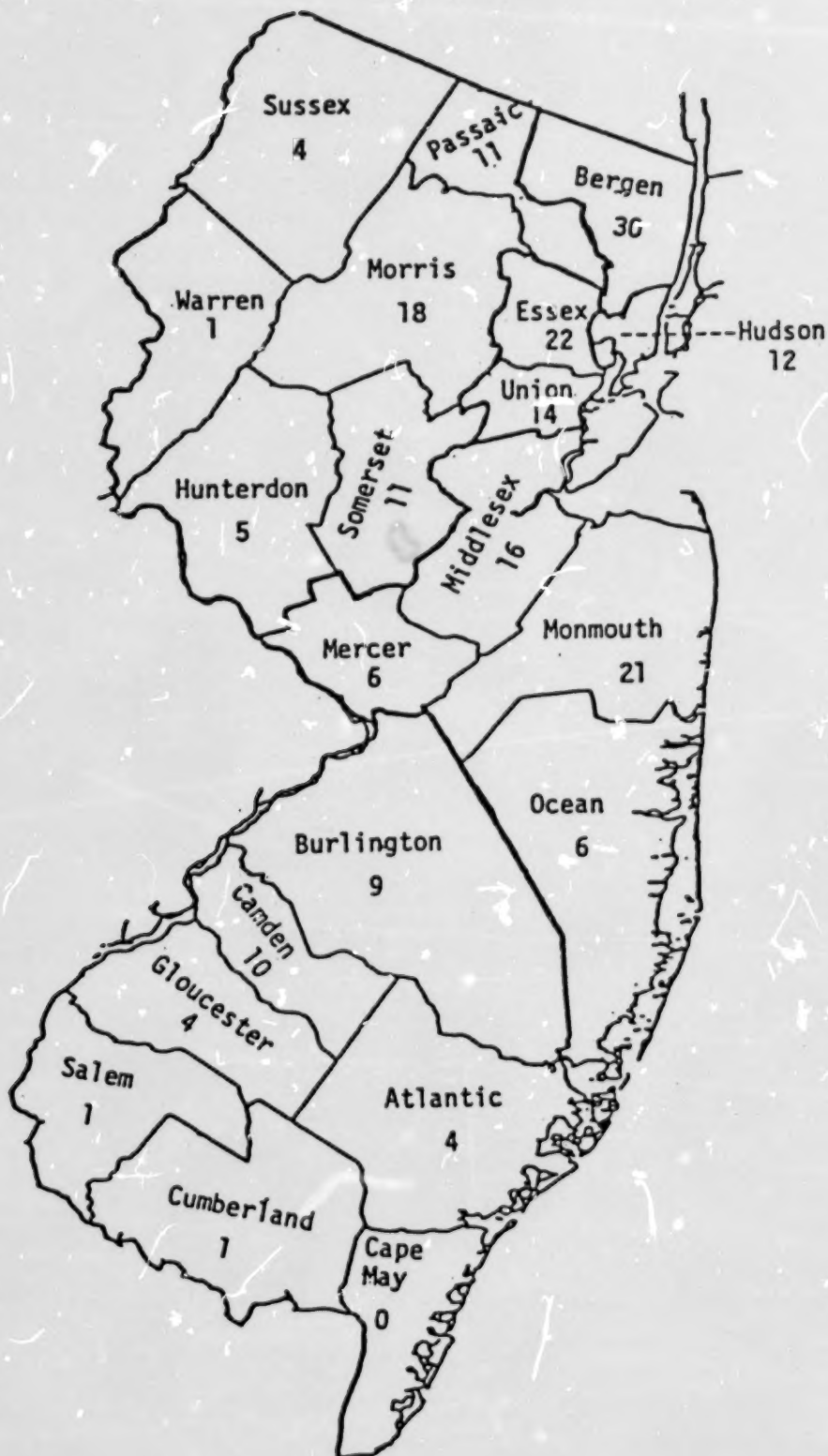
In reviewing the data, it should be noted that not all questions were answered on each questionnaire; therefore, totals may differ. Wherever possible, results have been summarized as percentages so that comparisons can be made more easily.

Because of the growing shortage of qualified science teachers, this survey included questions relating to teacher turnover, ease of recruitment, and loss of science teachers to business and industry.

The New Jersey Science Supervisors Association expresses its thanks to those science supervisors who took the time to respond to the survey. It is our hope that this information will be helpful in our efforts to improve science education in New Jersey. A special note of thanks goes to the science homeroom students at Scotch Plains-Fanwood High School who tabulated most of the data.

DAVID A. SOUSA
President, NJSSA

June 1982



NUMBER OF SCHOOLS RESPONDING BY COUNTY

HIGHLIGHTS OF THE 1982 SURVEY OF SCIENCE
TEACHING IN THE SECONDARY SCHOOLS OF NEW JERSEY

PERCENTAGE OF STUDENTS TAKING SCIENCE

The percentage of students taking science has increased from 61.9 percent in 1978 to 67.0 percent in 1982.

FIELD TRIPS

While there was an increase in Board of Education funded field trips between 1974 and 1978, the current survey showed a decline in board funded field trips (43.4 percent in 1978 vs 32.5 percent in 1982). Since 1978, there has been an increase in student paid field trips (25.9 percent in 1978 vs 33.1 percent in 1982).

REIMBURSEMENT FOR CONFERENCES AND CONVENTIONS

There is a decrease in the number of districts which pay some or all of the expenses for department heads and for teachers. There is an increase in the number of districts which provide no reimbursement at all.

TEACHING LOAD AND NON-TEACHING DUTIES

The number of districts reporting that science teachers perform additional non-teaching duties (e.g. study hall supervision, lunch supervision, etc.) remained about the same. There was a slight increase, however, in the number of periods per week assigned to these "other" duties (4.8 periods per week in 1978 vs 5.0 periods per week in 1982).

PAID LABORATORY ASSISTANTS

The percentage of schools reporting that paid laboratory assistants are provided declined from 13 percent in 1978 to 9 percent in 1982.

STAFF DECREASES

The percentage of schools reporting staff decreases has changed from 25.9 percent in 1978 to 76.2 percent in 1982. The greatest decrease is due to teachers accepting positions in business and industry (42.9 percent) and due to declining enrollment (33.3 percent).

SUPERVISOR EXPERIENCE

The average years of experience for Department Heads is increasing, 19.4 years vs 18.0 years.

SUPERVISING TEACHING LOAD

The average number of teaching periods for supervisors is decreasing

from 13 periods per week to 11.5 periods per week.

SUPERVISOR CERTIFICATION

The percentage of supervisors possessing a supervisory certificate has increased from 83.8 percent to 90.2 percent. The percentage of cases in which a supervisor's certificate is required has increased from 64.1 percent to 74.5 percent.

SUPERVISORS AND EVALUATION OF PERSONNEL

The percentage of supervisors responsible for evaluating science personnel has increased from 76.8 percent to 85.8 percent.

ADVANCED PLACEMENT PROGRAMS

The percentage of AP courses increased as follows:

- The percentage of schools offering Advanced Placement biology courses has increased from 32.8 percent to 41.9 percent.
- The percentage of schools offering Advanced Placement chemistry courses has increased from 25.9 percent to 38.1 percent.
- The percentage of schools offering Advanced Placement physics courses has increased from 13.3 percent to 20.5 percent.
- The percentage of districts offering no Advanced Placement courses has decreased from 49.7 percent to 28.1 percent.

SECOND YEAR COURSES

- There has been an increase in the percentage of schools offering second year courses in biology from 57.3 percent in 1978 to 66.7 percent in 1982. Both of these figures are however lower than those reported in 1974 (71.7 percent).
- There has been a slight decrease in the percentage of schools offering second year courses in chemistry from 41.9 percent in 1978 to 40.4 percent in 1982.
- There has been an increase in the percentage of schools offering second year courses in Physics from 18.9 percent in 1978 to 20.4 percent in 1982. Both the 1978 and 1982 surveys indicate a substantial increase over the percentage of schools offering a second year physics course in 1974 (13.0 percent).

INSTRUCTIONAL TIME

- The average number of minutes per week allotted to Biology instruction has decreased from 243 minutes in 1978 to 222 minutes in 1982. This represents a 21 minute or 8.6 percent reduction.

---The average number of minutes per week allotted to chemistry instruction has increased slightly from 266 minutes in 1978 to 270 minutes in 1982. This represents an increase of 4 minutes or 1.5 percent per week.

---The average number of minutes per week allotted to physics instruction has decreased from 291 minutes in 1978 to 270 minutes in 1982. This represents a decrease of 21 minutes or 7.2 percent per week.

DOUBLE LAB PERIODS

---There has been a 19.9 percent decrease in double lab periods in biology.

---There has been a 11.2 percent decrease in double lab periods in chemistry.

---There has been a 7.8 percent decrease in double lab periods in physics.

PROGRAM/USE

---In 1974, I.P.S. represented 21.7 percent of the programs offered. This increased in 1978 to 23.8 percent and in 1982 to 25.2 percent.

---In 1974, Chem Study was 48.6 percent. It decreased to 43.4 percent in 1978, and made a dramatic decline to 25.2 percent in 1982.

---In 1974, PSSC Physics was used in 45.6 percent of the schools. The percentage dropped to 31.5 percent in 1978 and 23.3 in 1982.

---Project Physics showed a decline from 38.4 percent in 1974 to 30.8 percent in 1978 and declined further to 20.0 percent in 1982.

---Modern Physics, on the other hand, increased from 13.0 percent in 1974 to 26.6 percent in 1978 and climbed to 31.4 percent in 1982.

---All three versions of BSCS showed a marked decrease during the period (1974 to 1982). Blue version decreased from 29.7 percent in 1974 to 21.7 percent in 1978 to 16.7 percent in 1982. Green version declined from 31.9 percent in 1974 to 21.0 in 1978 to 12.8 in 1982. Yellow version decreased from 33.3 percent in 1974 to 19.6 percent in 1978 and further to 10.5 percent in 1982.

---Modern Biology increased from 32.6 percent in 1974 to 52.4 percent in 1978, but showed a decrease to 43.8 in 1982.

---ESCP Earth Science dropped from 15.2 percent in 1974 to 6.0 percent in 1982.

TOP TEXTBOOKS

COURSE	1982 (N = 210)*	
EARTH SCIENCE	Earth Science, Namowitz	11.4%
PHYSICAL SCIENCE	IPS	25.2%
	Focus on Physical Sci.	8.4%
BIOLOGY	Modern Biology	43.8%
	BSCS Blue	16.7%
	BSCS Green	12.8%
	BSCS Yellow	10.5%
CHEMISTRY	Modern Chemistry	37.6%
	Chem Study	25.2%
PHYSICS	Modern Physics	31.4%
	PSSC	23.3%
	Project Physics	20.0%

1978 (N = 143)*	
Earth Science, Namowitz	15.4%
IPS	23.8%
ISCS	9.8%
Modern Biology	52.4%
BSCS Blue	21.7%
BSCS Green	21.0%
BSCS Yellow	14.6%
Modern Chemistry	46.2%
Chem Study	43.4%
Modern Physics	25.6%
PSSC	31.5%
Project Physics	30.8%

1974 (N = 138)*	
ESCP	15.2%
IPS	21.7%
ISCS	8.0%
Modern Biology	32.6%
BSCS Blue	29.7%
BSCS Green	31.9%
BSCS Yellow	33.3%
Modern Chemistry	27.5%
Chem Study	48.6%
Modern Physics	13.0%
PSSC	45.6%
Project Physics	38.4%

1969 (N = 168)*	
ESCP	25.7%
Earth Science, Namowitz	3.8%
IPS	17.4%
Modern Biology	38.3%
BSCS Blue	16.2%
BSCS Green	15.7%
BSCS Yellow	19.5%
Modern Chemistry	42.9%
Chem Study	35.6%
Modern Physics	33.4%
PSSC	46.6%
Project Physics	--

*Number of Respondents



THE SAMPLE - 1982

Questionnaires were sent to 382 public and non-public secondary schools in the state of New Jersey. The schools were those contained in the listing of secondary schools accredited by the Middle States Association of Secondary Schools and Colleges as of July 1979. Fifty-five percent of the schools responded as follows:

	<u>Sent Out</u>	<u>Received</u>	<u>% Response</u>
Public ---	299	176	58.9
Private ---	83	34	41.0
	<u>382</u>	<u>210</u>	55.0

SURVEY RESULTS

PART I - GENERAL INFORMATION

1. Percentage of Students Enrolled in Science Courses:

Public: 67.0% Private: 73.2% Total: 68.1%

2. Number of Fully Certified Science Teachers:

Public: 1737 Private: 120 Total: 1857

3. Field Trip Funding:

		<u>No. of Schools</u> <u>1981 - 1982</u>		<u>% of</u> <u>Paid</u>	<u>Private</u>	<u>1977-78</u>	<u>% of</u> <u>Paid</u>
Paid by Student:	Public ---	56	-	33.1	-	37	27.2
	Private ---	-	22	-	68.8	-	-
Paid by Bd of Ed:	Public ---	55	-	32.5	-	62	45.6
	Private ---	-	N/A	-	-	-	-
Policy Varies:	Public ---	58	-	34.4	-	37	27.2
	Private ---	-	10	-	31.2	-	-
	Totals ---	169	32	100.0	100.0	136	100.0

Since 1977-78, there has been a shift of field trip costs from Board-paid to student-paid.

4. Decrease in Staff Due to Declining Enrollment (Number of Schools):

Public ---	YES: 69	NO: 107	TOTALS: 176
Private ---	1	33	34
	<u>70</u>	<u>140</u>	<u>210</u>

5. Extent of Difficulty in Recruiting New Science Teachers (Number of Schools):

	<u>Not</u> <u>Difficult</u>	<u>Moderately</u> <u>Difficult</u>	<u>Very</u> <u>Difficult</u>	<u>Total</u>
Public ---	17	66	73	156
Private ---	3	17	13	33
Totals ---	<u>20</u>	<u>83</u>	<u>86</u>	<u>189</u>

6. Are There Science Staff With Emergency Certification? (Number of Schools):

Public --- YES:	16	NO:	160	TOTALS:	176
Private ---	<u>4</u>		<u>29</u>		<u>33</u>
Totals ---	20		189		209

7. Have Science Teachers Resigned in Past Two Years for Positions in Business And/or Industry? (Number of Schools):

Public --- YES:	73	NO:	103	TOTALS:	176
Private ---	<u>17</u>		<u>17</u>		<u>34</u>
Totals ---	90		120		210

8. Number and Percentage of Science Teachers That Resigned in Past Two Years To Accept Positions in Business And/or Industry. (Number of Schools):

	<u># Resigned</u>	<u>Total Science Staff</u>	<u>% Resigned</u>
Public ---	102	1736	5.9
Private ---	<u>30</u>	<u>120</u>	25.0
Totals ---	132	1856	7.1

9. Safety - Is There an Instructional Safety Program for Staff? (Number of Schools)

Public --- YES:	72	NO:	104	TOTALS:	176
Private ---	<u>8</u>		<u>25</u>		<u>33</u>
Totals ---	80		129		209

10. Is There an Instructional Safety Program for Students?

Many respondents chose to make verbal comments which indicated that a wide variety of techniques are used to instruct students in laboratory safety. The extent of such instruction varied with individual teachers, grade level & course

11. Has the Administration Adopted a Safety Policy? (Number of Schools):

Public --- YES:	73	NO:	93	TOTALS:	166
Private ---	<u>19</u>		<u>10</u>		<u>29</u>
Totals ---	92		103		195

12. Reimbursement for Science Conventions and Conferences. (Number of Schools):

For:	<u>Some or All Expenses</u>				<u>Overnight Expenses</u>			
	<u>1981-82</u>		<u>1977-78</u>		<u>1981-82</u>		<u>1977-78</u>	
Dept Head-Public ---	133	75.6%	118	85.6%	72	40.9%	88	63.8%
Private ---	25		-		14		-	
Teacher -Public ---	125		108		63		71	
Private ---	21		-		13		-	
No Reim-								
bursement-Public ---	43		20		103		50	
Private ---	13		-		18		-	

It was necessary to group all schools which responded that none or all expenses were paid because of the wide variations in the amount and items that were reimbursed by districts.

13. Is There a Restriction on the Number of Staff Permitted to Participate in Professional Activities on a Given Day? (Number of Schools):

Public ---	YES: 109	NO: 55	TOTALS: 164
Private ---	<u>14</u>	<u>18</u>	<u>32</u>
Totals ---	123	73	196

14. Average Preparation Per Teacher. (Number of Schools):

	<u>1 Prep</u>	<u>2 Prep</u>	<u>3 Prep</u>	<u>4 Prep</u>	<u>More</u>	<u>Total</u>
Public ---	31	76	23	2	3	135
Private ---	<u>4</u>	<u>17</u>	<u>6</u>	<u>0</u>	<u>3</u>	<u>30</u>
Totals ---	35	93	29	2	6	165

15. Do Science Teachers Perform Additional Duties (e.g. study hall, lunch supervision)? (Number of Schools):

Public ---	YES: 132	NO: 2	TOTAL: 134	Average Number of Periods Per Week: 5
Private ---	<u>23</u>	<u>7</u>	<u>30</u>	3.4
Totals ---	155	9	164	

16. Are Paid Laboratory Assistants Provided? (Number of Schools):

Public ---	NO: 129	YES: 10	Student: 5	Adult: 9	Full-Time: 4	Part-Time: 9
Private ---	<u>26</u>	<u>4</u>	3	1	0	4
Totals ---	155	14				

PART II - SUPERVISORY PERSONNEL

	<u>Public</u>	<u>Private</u>
1. Average Years of Teaching Experience -----	19.4	18.3
2. Average Years as Department Chairperson -----	9.0	8.4
3. Average Number of Teaching Periods Per Week -----	11.5	21.7
4. Range of Teaching Periods Per Week -----	0-35	0-34
5. Average Number of Teachers in Department-----	10.3	5.5
6. Do Supervisors Hold a Supervisory Certificate? YES: 157		3
NO: 17		30
7. Is It a Requirement of the Position? YES: 126		43
NO: 43		31
8. Distribution of Responsibilities:		

Public
(176 Respondents)

151	Supervision/Evaluation
170	Curriculum Dev/Evaluation
172	Inventory of Equip/Supplies
151	Supervisor Used as Substitute
151	Teaching

Private
(33 Respondents)

29
31
31
10
32

Public
(176 Respondents)

153	Scheduling
168	Budget Building
166	Order and Receive
124	Recruitment
151	Interviewing

Private
(33 Respondents)

15
19
26
12
23

9. Bargaining Unit for Supervisors (Number of Schools):

	<u>Administrative</u>	<u>Supervisors</u> (Separate for Admin)	<u>Teachers</u>	<u>Total</u>
Public ---	78	12	84	174
Private ---	4	-	21	25

10. Department Meetings (Number of Schools):

Public	---	Weekly: 14	Monthly: 113	Other: 49	Total: 176
Private	---	<u>4</u>	<u>16</u>	<u>7</u>	<u>27</u>
Totals	---	28	129	56	203
Public	---	During School Day: 43	After School: 141	Total: 184*	
Private	---	<u>18</u>	<u>15</u>	<u>33</u>	
Totals	---	61	156	217*	

*These totals are larger than number of schools because some departments meet both during the school day and after school.

11. Problems That Concern Science Supervisors

Public:

<u>Rank</u>	<u>Problem</u>	<u>% of Supervisors Ranking Problems in 1st or 2nd Place</u>
1	Staffing	62.7
2	Financial Support	55.4
3	Staff Development	48.8
4	Maintenance of Supplies	36.1
5	Decreasing Enrollment	34.2
6	Recruitment	31.0
7	Facilities	19.1

Private:

1	Staff Development	71.4
2	Staffing	68.2
3	Financial Support	40.0
4	Recruitment	36.4
5	Maintenance of Supplies	27.8
6	Facilities	25.0
7	Decreasing Enrollment	0.0

PART III - STATISTICS ON SUBJECT MATTER ORGANIZATION

COURSE	Grade Level	# of Schools Tchg. Course		Average Mins. Per Week		Average Class Size		# of Double Lab Periods Per Week							
		Public	Non-Public	Public	Non-Public	Public	Non-Public	Public				Non-Public			
								0	1	2	2+	0	1	2	2+
PHYSICAL SCIENCE:															
IPS	9	37	9	220	210	23.4	22.4	36	1	-	-	5	3	1	-
ISCS	9	9	1	221	235	22.8	12.0	8	-	-	-	-	-	-	-
	10-12	3	0	210	-	21.0	-	-	-	-	-	-	-	-	-
OTHER	9	74	16	220	198	23.1	25.2	61	3	2	-	12	5	1	1
	10-12	22	3	224	235	19.5	21.0	18	2	2	-	2	1	-	-
EARTH SCIENCE:															
	9	76	2	217	200	22.5	36.0	58	8	-	-	2	-	-	-
	10	5	0	230	-	25.0	-	4	1	-	-	-	-	-	-
	11	12	1	225	260	20.0	25	9	1	1	-	1	-	-	-
	12	6	0	272	-	23.4	-	4	2	-	-	-	-	-	-
NOTE: 61 public schools reported that they do not offer Earth Science in Grades 9-12.															
BIOLOGY:															
	9	41	8	253	257	21.2	19.5	8	9	5	1	3	5	-	-
	10	224	32	214	244	22.6	23.4	84	80	37	1	11	15	6	-
	11	5	1	212	124	31.2	10.0	4	1	-	-	-	-	-	-
	12	2	-	308	-	13.5	-	-	1	2	-	-	-	-	-
CHEMISTRY:															
OTHER	10	28	6	283	259	20.8	16.2	3	16	8	1	3	2	1	-
	11-12	176	34	268	243	20.9	21.8	31	80	44	6	4	12	2	-
CHEM STUDY	10	11	2	272	225	21.5	25.0	1	5	3	-	2	-	-	-
	11	25	9	270	296	19.5	15.6	7	9	9	-	6	2	-	-
PHYSICS:															
PSSC	10	1	1	270	200	22.0	16.0	1	-	-	-	1	-	-	-
	11	10	-	282	-	20.6	-	1	6	3	-	-	-	-	-
	12	38	3	270	327	19.1	11.6	5	11	18	-	-	1	-	1
PROJECT	11	13	1	276	290	19.2	12.0	2	5	6	-	-	-	-	-
	12	28	4	253	320	18.5	14.8	7	11	8	-	-	3	-	1
OTHER	10	1	-	245	-	25.0	-	1	-	-	-	-	-	-	-
	11	36	6	265	215	20.4	16.2	3	21	11	-	3	3	-	-
	12	99	23	274	244	21.5	20.9	16	50	22	4	3	15	4	-

NOTE: The data above and the following are based on 170 responses rather than the total 210. Information on the balance of responses was incomplete and could not be tabulated.

PART III - STATISTICS ON SUBJECT MATTER ORGANIZATION (Cont'd)

1. Is Biology Offered in Grade 5? (Number of Schools):

	<u>NO</u>	<u>YES, To Any Student Who Requests It</u>	<u>YES, To Selected Students</u>	<u>YES, To Most Students</u>	<u>Total</u>
Public ---	47	23	99	7	176
Private ---	10	3	15	6	34
Totals ---	57	26	114	13	210

2. Advanced Placement Programs and Grade Levels. (Number of Schools):

<u>Program</u>		<u># of Schools</u>	<u>10th</u>	<u>11th</u>	<u>12th</u>
Biology:	Public ---	88	16	41	70
	Private ---	17	4	4	14
Chemistry:	Public ---	80	6	46	62
	Private ---	12	1	7	10
Physics:	Public ---	47	0	18	47
	Private ---	6	0	2	3
None Offered:	Public ---	59	-	-	-
	Private ---	12	-	-	-

PART IV - TEXTBOOKS USED IN PUBLIC AND NON-PUBLIC SCHOOLS

Texts specified more than once by both public and non-public schools are included in the lists below. However, it should be noted that not every school indicated the text(s) used.

<u>TITLE</u>	<u>AUTHOR(S)</u>	<u>PUBLISHER</u>	
<u>EARTH SCIENCE:</u>			
Earth Science	Namowitz and Stone	American Book (Heath)	29
Modern Earth Science	Ramsey, et al.	Holt	20
Focus on Earth Science	Bishop, Howell	Merrill	17
ESCP (Investigating the Earth)	American Geological Institute	Houghton Mifflin	13
Earth Science	Brown, Kemper	Silver Burdett	4
Pathways in Science	Oxenhorn	Globe	4
IIS	Wong, Dolmatz	Prentice Hall	2
Multi-texts	---	---	4
<u>PHYSICAL SCIENCE:</u>			
IPS	Haber-Schaim, et al.	Prentice Hall	53
Focus on Physical Science	Heimler, Price	Merrill	25
Physical Science	Ramsey, et al.	Holt	18
Modern Physical Science	Tracy, Tropp, Friedl	Holt	18
ISCS	Group	Silver Burdett	9
General Science	Ramsey, et al.	Holt	7
Principles of Science	Heimler, Neal	Merrill	6
Physical Science	Barman, Rusch, et al.	Silver Burdett	6
IIS	Wong, Dolmatz	Prentice Hall	4
Interaction Matter Energy	ISC Team	Rand McNally	4
PSII	Group	Prentice Hall	3
Pathways in Science	Oxenhorn	Globe	3
Energy: A Physical Science	Brandwein	Harcourt Brace	3
Physical Science: Problem Solving Approach	Carter	Ginn	3
Concepts in Science	---	Cebco	2
Phys. Sci. Investigations	Bickel	Houghton Mifflin	2
Man Made World	---	McGraw Hill	2
Gen. Sci. for Tomorrow's World	Smallwood, Braun	McGraw Hill	2

TITLE	AUTHOR(S)	PUBLISHER	
<u>PHYSICAL SCIENCE (Cont'd):</u>			
Spaceship Earth/Phys. Sci.	Hill, May	Houghton Mifflin	2
Phys. Sci./Search for Understanding	Anderson, et al.	Lippencott	2
Multi-texts	---	---	4
<u>CHEMISTRY:</u>			
Modern Chemistry	Metcalf, et al.	Holt	79
Chem Study (All Versions)	---	---	53
Chemistry: A Modern Course	Smoot, Price	Merrill	31
Concepts in Chemistry	Greenstone, Harris	Harcourt Brace	14
Action Chemistry	Bolton, et al.	Holt	14
Chemistry	Choppin, et al.	Silver Burdett	12
Chemistry	Masterton et al	Holt Rinehart	12
IAC (Interdisciplinary Approach to Chemistry)	IAC Team	Harper Row	11
Foundations of Chemistry	Joan Ellis	Holt	11
Basic Chemistry	Seese, Daub	Prentice Hall	5
Keys to Chemistry	Ledbetter	Addison, Wesley	5
A Chemical World	Darlington, et al.	Houghton Mifflin	4
Introduction to Chemistry	Brown, Lamey	Little Brown	3
Concepts in Modern Chemistry	Kavanaugh	Cambridge	2
General Chemistry, Principles and Applications	Petrucchi	McMillan	2
Elements of Chemistry	Baylen	Allyn & Bacon	2
Inquires in Chemistry	Turner, Sears	Allyn & Bacon	2
<u>PHYSICS:</u>			
Modern Physics	Metcalf, Williams	Holt	66
PSSC	Haber-Schaim et al	Heath	49
Project Physics	Rutherford et al	Holt	42
Physics	Smoot, Murphy	Merrill	30
Physics: Its Methods & Meaning	Taffel	Allyn & Bacon	15
Physics	Genzer, Youngner	Silver Burdett	8
Concepts in Physics	Miller, et al.	Harcourt Brace	7
Physics: Fundamentals	Stollberg, Hill	Houghton Mifflin	5
Conceptual Physics	Hewitt	Little Brown	3

TITLE	AUTHOR(S)	PUBLISHER	
<u>PHYSICS (Cont'd):</u>			
World of Physics	Hulsizer, Lazarus	Addison Wesley	3
Multi-texts	---	---	2
<u>BIOLOGY:</u>			
Modern Biology	Otto	Holt	92
BSCS Blue Version	BSCS Team	Houghton Mifflin (Heath)	35
BSCS Green Version	BSCS Team	Rand McNally (Houghton Mifflin)	27
Biology: Living Systems	Smoot, et al.	Merrill	27
BSCS Yellow Version	BSCS Team	Harcourt Brace	23
Life Science	Richardson, Harris	Silver Burdett	20
Biology	Slesnick	Scott Foresman	9
Action Biology	Weinberg	Allyn Bacon	7
Pathways in Biology	Oxenhorn	Globe	8
Life Science: Problem Solving	Carter	Ginn	6
Biology	Smallwood, Alexander	Silver Burdett	6
Biology and Human Progress	Tanzer	Prentice Hall	5
Multi-texts	---	---	4
IIS	Wong	Prentice Hall	3
Focus on Life Science	Heimler, Lockard	Merrill	3
Life: Activities and Explorations	Fabiano	Houghton Mifflin	3
Biology: You and Environment	Cunningham	Heath	3
Biology	Creager	McMillan	2

PART V - SECOND YEAR COURSES

The following are the number of responses from both public and non-public schools indicating the number of second year science courses offered.

<u>COURSE</u>	<u>NUMBER OF RESPONSES</u>
Biology	140
Chemistry	85
Physics	43

<u>TITLE</u>	<u>AUTHOR(S)</u>	<u>PUBLISHER</u>	
<u>BIOLOGY: SECOND YEAR TEXTS</u>			
Biology	Keeton	Norton	22
Human Physiology	Morrison, et al.	Holt	14
Multi-texts	---	---	11
Biology	Curtis	Worth	8
Interaction of Experiments and Ideas	---	Prentice Hall	6
Elements of Biology	Weisz	McGraw Hill	5
Biological Principles	Villee, Delthier	Saunders	4
Biology	Kimball	Addison Wesley	4
Biology Today	Kirk	Random House	3
<u>CHEMISTRY: SECOND YEAR TEXTS</u>			
Chemical Principles	Masterton	Saunders	21
Chemistry: Principles	Sienko, Plane	McGraw Hill	8
Foundations of Chemistry	Ellis	Holt	5
College Chemistry	Nebergall, et al.	Heath	4
Multi-texts	---	---	4
Chemistry: The Central Science	Brown, LeMay	Prentice Hall	3
Modern Chemistry	Masterton et al	Houghton Mifflin	2
Chemistry	Quagliano	Prentice Hall	2
Organic Chemistry: A Brief Course	Listromberg and Baumgarten	Heath	2

<u>TITLE</u>	<u>AUTHOR(S)</u>	<u>PUBLISHER</u>	
<u>PHYSICS: SECOND YEAR TEXTS</u>			
Physics	Halliday, Resnick	Wiley	18
University Physics	Sears, Zemansky	Addison Wesley	7
College Physics	Miller	Harcourt Brace	3
Physics	Tipler	Worth	2
Physics for College Students- Contemporary College Physics	Tilley	Benjamin-Cummings	2

PART IV - SCIENCE ELECTIVES

Public and Non-Public Schools

The following courses are offered in the schools responding. They are offered at many levels with many scheduling patterns and are grouped according to physics, biology, chemistry, geology and other. This listing of courses may provide you with ideas for future course consideration.

<u>PHYSICS</u>	<u># of Schools</u>	<u>CHEMISTRY</u>	<u># of Schools</u>
Astronomy	... 17	Organic Chemistry	... 10
Electricity	... 4	Consumer Chemistry	... 2
Electronics	... 3	(Science in the Marketplace)	
Radiation Science	... 2	Environmental Chemistry	... 1
Automotive Electronics	... 1	Health Careers in Chemistry	... 1
Calculus/Physics	... 1	Inorganic Chemistry	... 1
Energy	... 1	Practical Chemistry	... 1
Electricity & Magnetism	... 1	Qualitative Analysis	... 1
Nuclear Science	... 1		
Survey Physics	... 1		
		<u>GEOLOGY</u>	
<u>BIOLOGY</u>		Geology II	... 3
Anatomy/Physiology	... 28	Advanced History of Geology	... 1
Environmental Studies	... 19	Advanced Physical Geology	... 1
Ecology	... 17	Geology of New Jersey	... 1
Oceanography	... 14		
Marine Biology	... 11	<u>OTHER</u>	
Genetics	... 6	General Science	... 4
Horticulture	... 5	Contemporary Science	... 4
Animal Behavior	... 4	Meteorology	... 4
Botony	... 3	Senior Science	... 4
Embryology	... 3	Applied Science	... 3
Zoology Survey	... 3	Biochemistry	... 2
Environs. Aware/Issues	... 3	Advanced Science	... 2
Agricultural Bio	... 2	Science Seminar	... 2
Bio Lab Techniques	... 2	Lab Techniques/Procedures	... 2
Intro to Life Science	... 2	Consumer Science	... 2
Advanced Biology	... 1	Ascent of Man/History of Sci....	2
Aquatic Biology	... 1	Biopsychology	... 1
Bioethics	... 1	Comprehensive Science	... 1
Cooperative Health Educ....	1	Intro 2000	... 1
Environment in Crisis	... 1	Intro to Microcomputers	... 1
Forestry	... 1	Language of Science	... 1
Health Occupations	... 1	Principles of Art & Science	... 1
Invertebrate Zoology	... 1	Psychology	... 1
Medical Careers	... 1	Research Problems	... 1
Medical Terminology	... 1	Science For Life	... 1
Microbiology	... 1	Science Technology	... 1
Microtechnique	... 1	Science/Mathematics	... 1
Nutrition	... 1	Technology and People	... 1
Urban Ecology	... 1		
Vertebrate Biology	... 1		